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April 07, 2005

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE UNDER 35 USC 111.

APPLICATION NUMBER: *60/557,676*
FILING DATE: *March 31, 2004*

By Authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS

G. Montgomery

W. MONTGOMERY
Certifying Officer

PATENT
Attorney Docket 060784-0001-PR

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a Provisional Application under 37 C.F.R. § 1.53(c).

1. **INVENTORS**

Last Name	First Name	MI	Residence
Pohoreski	**Anton**	**P**	**British Columbia, Canada**

2. **TITLE: Sulphur-Containing Oils for Controlling Plant Pathogens**

3. **APPLICATION PAPERS ENCLOSED**
   8 Pages of Specification
   0 Pages of Drawings

4. **METHOD OF PAYMENT - FILING FEE - $80.00 (Small Entity)**
   The Commissioner is hereby authorized to charge **$80.00** to Deposit Account **50-0310** for payment of the provisional application filing fee at the small entity rate.

   Except for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. § 1.16 and § 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account 50-0310. This paragraph is intended to be an **constructive petition for extension of time** in accordance with 37 C.F.R. § 1.136(a)(3).

5. **CORRESPONDENCE ADDRESS**
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1-WA/2165364.1

Provisional Application

I propose new and innovative products to kill and or control most types of plant fungi, mildew, molds, moss, rust, etc. in and on plants and soil, methods to produce the products and how to use them.

Abstract

Present products used to partially control fungi, mildew, moss, molds, and rust on plants tend to be toxic to the environment, humans, and/or phytotoxic to the plants and the soil to some degree. The agricultural industry has been experiencing large losses in crop yield, plant damage and premature plant death due to soil and plant fungi, mildews, molds, mosses, rust, etc. The industry has long known that elemental sulphur is an excellent fungicidal but it has some major drawbacks in its use as a fungicidal.

First, it is phytotoxic to most plants.

Second, it is very weather sensitive (heat and humidity) can cause it to become extremely phytotoxic.

Third, it can not be used during certain stages of plant growth, eg. while flowering as it destroys the flower and/or fruit or berry or leaf.

Because of the limitations of sulphur and the phytotoxicity of other fungicidals, etc. various other methods have been tried to control the soil and plant fungi, eg. various

essential oils and plant oils have been used with limited success. The oils tend to plug the stomata in the plants causing the plant to stunt or even kill the plant within 48 hours. The present invention consists of showing how to produce various types of products from oils that can control or kill molds, mildews, fungi, moss, rust, etc. on plants and in soil.

What is claimed

Mixing a plant oil such as canola, soy, etc, but not limited to and an acid such as sulphuric or SO3, etc. but not limited to, in a double walled or jacketed vessel or equipped with heating or cooling coils of some sort, with a stirrer of some type to mix the solution. The solution is reacted over a period of time then neutralized and decanted. The resulting product is then used to kill or control mosses, fungi, molds, mildew, rust, etc. in soil and most plants such as fruit trees such as apples, etc., vegetables such as peppers, etc., flowers such as roses, etc. berries such as blueberries, etc., grains such as wheat, etc., or hops, bananas, cotton, etc. but not limited to those named here.

I propose a new and innovative method of controlling fungi, mildew, mold, etc. on plants and in soil by combining the potency of the sulphur and the wetability of the oil to accomplish this.

First the phytotoxicity of the sulphur molecules is dampened by reacting it in the oil and second the oil's insolvency in water which causes the stomata to become plugged, thus injuring or killing the plant becomes harmless since the sulphur and oil product becomes water soluble as a surfactant and becomes harmless to the plant.

The process consists of the following:

A measured amount of oil, preferably canola, but not limited to, is put into a reactor equipped with some sort of cooling capacity (chambers), and some sort of stirrer for mixing the contents. While mixing the oil a known amount of acid preferably concentrated sulphuric acid, but not limited to is slowly added to the oil. The acid is added slowly over a period of time keeping the temperature below a certain point; preferably below 35 C but not limited to. The cooling jacket or apparatus in the vessel is used to cool the resultant mixture as the reaction of the oil and acid is an exothermic one and should be kept below a certain point or some of the oil may become carbonized and the sulphric acid can be reduced to sulphur anhydride.

To slow or to fast mixing can also produce an inferior product.

After all the acid is added to the oil over a period of 2-4 hrs but not limited to, the mixture is then allowed to stand for a certain period of time usually 12 hrs, but not limited to, to allow the sulphating process to complete.

After the solution has stood for the fixed period of time the mixture is neutralized with a known amount of an alkali, preferably 3N sodium hydroxide, but not limited to. The neutralization process is also exothermic and may require cooling to be used with the neutralizer added slowly with constant mixing or agitation to keep the temperature below a certain degree preferably 40 C but not limited to. After all the neutralizer is added over a period of time preferably 2-4 hours but not limited to, the neutralized solution is allowed to stand and separate. The pH at this time is about 1 pH but not limited to. The

sulphated oils come to the top with the water and the salts such as sodium sulfate, if using sulfuric acid, going to the bottom of the vessel. Prior to or after neutralizing the solution can also be washed with a salt solution if it is determined that there are undesirable components in the mixture. The pH is then adjusted to 3.5 to 7 but not limited to depending on what application the product is to be used on.

The raw material used for sulphating is usually naturally occuring oils, fats or base stock synthesized from petroleum hydrocarbon but not limited to the above. The natural occuring oil can include canola oil, coconut oil, palm oil, cottonseed oil, palm kernel oil, olive oil, flax oil, castor oil, soybean, sunflower, corn, grape seed, peanut oils and mixtures thereof but not limited to those listed above. Other product can be animal fat such as beef, sheep, bird, neats foot, herring, cod liver, seal, and mixtures thereof but not limited to.

Mention must also be made of very short chain alcohols, saturated or unsaturated, methyl oleate, oleyl oleate, butyl ricinoleate, glycerol trioleate, propylene glycol dioleate, partial glycerols, etc., but not limited to those listed. Basically any product that contains unsaturated fat chains or of hydroxyl group present on fat chains that can be sulphated but not limited to those listed above.

The neutralizing agents can be alkali such as for example sodium or potassium hydroxide, sodium or potassium carbonate, calcium hydroxide or alkaline amines such as diethanolomine or ammonium hydroxide and those like but not limited to those listed above.

The oils can also be reacted in a fast sulphation process continuous or batch depending on the end product desired.

The above process of sulfation has used sulfuric acid but not limited to eq: but other acids such as "monohydrate" acid can be used.

Sulfonated oils made by using Na bisulfite but not limited to Na bisulfite can also be used as fungi moss, mildew, molds, rust control just as sulfated oils.

Fungi can also be controled using this product for human foot fungus, animal fungus, aquatic animals such as fish, shrimp, etc., birds but not limited to those listed above.

The finished product is diluted with water at a ratio of 2 quarts to 100 gal. of water and sprayed over 1 acre of crop to be treated but not limited to the above as different concentrations can be used depending on the severity of the problem.

For aquatic use the product is usually put on the dry food and then feed to the aquatic animal, fish, shrimp, etc. but not limited to those listed.

For mosses on roofs or hard surfaces the product is diluted with water and sprayed on the surface to kill the moss, mold, etc. On lawn grass or trees the misture is diluted 1 to 25 but not limited to and sprayed on the moss and left on to kill the moss.

For soil control of fungi, mold, etc. the product is first mixed at 1 to 25 but not limited to and the area to be treated is flooded causing the water product solution to sink through the soil acting as a plug, thus contacting roots, soil particles, etc. to kill or control the fungi, etc. These are not the only methods of application just a sampling of some methods of application.

Example 1

Raw canola oil (3 kg) was added to a double-walled vessel with cooling water capacity. Concentrated sulphuric acid (477 mL) was slowly to the oil with stirring and cooling of the vessel via circulation of cool water. The sulphuric acid was added at a such a rate that the temperature of the reaction mixture stayed between 30-35° C. The addition was typically complete after about 2 hours. The reaction mixture was then allowed to sit for approximately 18 hours for the sulphation to proceed. 3 N sodium hydroxide (3,880 mL) was slowly added to the oil/acid reaction mixture with stirring and cooling of the vessel via circulation of cool water. The sodium hydroxide was added at such a rate that the temperature of the reaction mixture stayed between 30-40° C. The addition was typically complete after about 2 hours. The neutralized reaction mixture was then allowed to sit for approximately 24 hours to allow the sulphated oil phase to rise to the top of the vessel and for the super saturated sodium sulphate water phase to settle to the bottom of the vessel. The lower aqueous phase was discarded. The pH of the upper sulphated canola oil phase was less than 1. The sulphated canola oil was diluted with R.O. (reverse osmosis) water at a ratio of one part oil to three parts water. At the same time, the pH of the solution was adjusted to a pH of approximately 4-5 with 3 N sodium hydroxide.

Application of the Sulphated Oil Solution from Example 1:

For hop powdery mildew, approximately two quarts of the pH adjusted sulphated canola oil was diluted with approximately 100 gallons of water and then sprayed onto plants covering a one-acre field.

We claim:

1. A sulphur-containing oil produced by the process described herein.

2. A method of using a sulphur-containing oil as described herein for controlling plant diseases caused by plant pathogens selected from the group consisting of molds, mildews, fungi and rusts.